



Volunteer Lake Assessment Program Individual Lake Reports

ARMINGTON LAKE, PIERMONT, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,368	Max. Depth (m):	9.7	Flushing Rate (yr ¹)	1.7
Surface Area (Ac.):	142	Mean Depth (m):	3.7	P Retention Coef:	0.62
Shore Length (m):	4,500	Volume (m ³):	2,125,500	Elevation (ft):	1334

TROPHIC CLASSIFICATION

Year	Trophic class
2005	OLIGOTROPHIC
2007	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2018 305(b) report on the status of N.H. waters, and are based on data collected from 2008-2017. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm

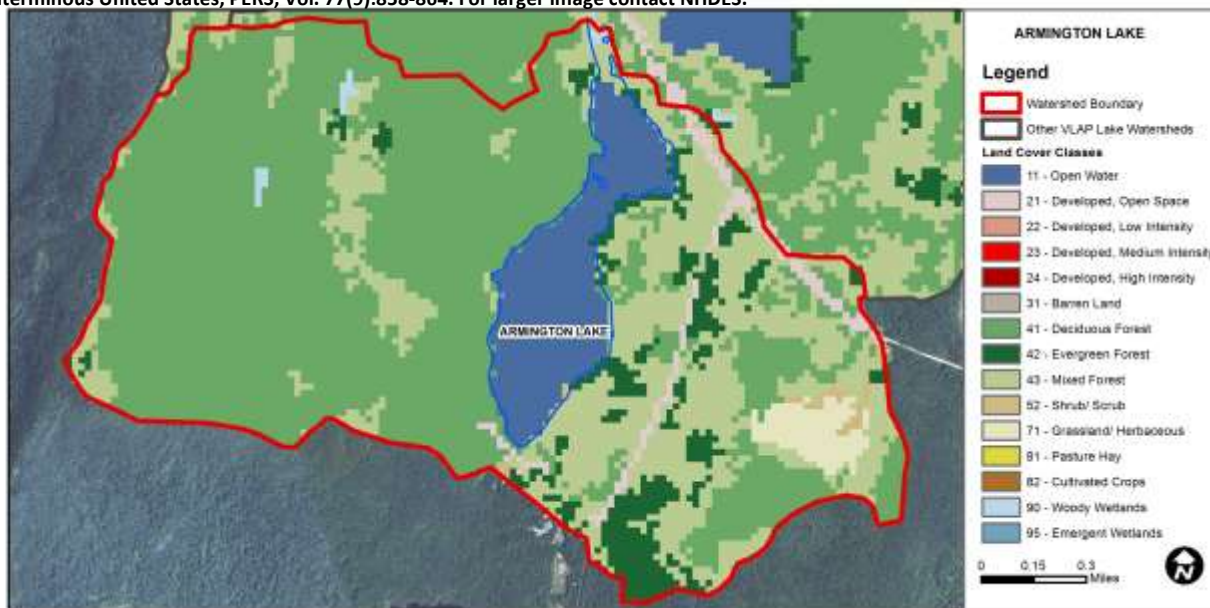
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
	Oxygen, Dissolved	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Dissolved oxygen satura	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
Primary Contact Recreation	Chlorophyll-a	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

LAKE ARMINGTON - CAMP WALT WHITMAN BEACH	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
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WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	8.87	Barren Land	0	Grassland/Herbaceous	1.86
Developed-Open Space	1.96	Deciduous Forest	55.85	Pasture Hay	0
Developed-Low Intensity	0	Evergreen Forest	6.58	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	23.81	Woody Wetlands	0.36
Developed-High Intensity	0	Shrub-Scrub	0.57	Emergent Wetlands	0



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

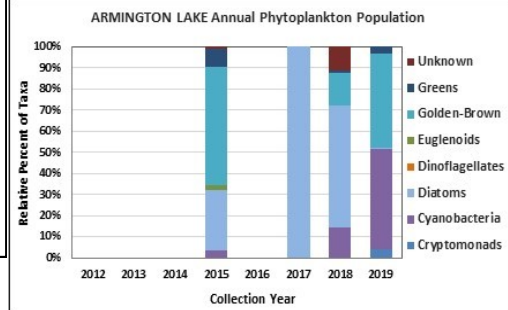
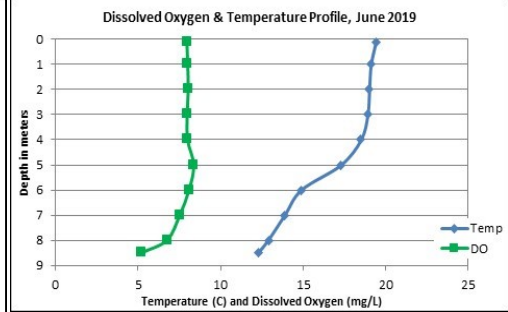
ARMINGTON LAKE, PIERMONT

2019 DATA SUMMARY

RECOMMENDED ACTIONS: The improving chlorophyll and phosphorus levels are a positive sign and we hope to see this continue! The low lake level and lack of flushing in July and August did not seem to impact lake quality, however fluctuations in lake levels should be monitored in relationship to water quality. Water color was darkest in June following spring runoff indicating the impacts of dissolved organic matter to the lake. Continue apparent color monitoring to better understand the relationship between color, turbidity and clarity in the lake. Keep up the great work!

OBSERVATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels fluctuated within a low range from June through August. Average chlorophyll level remained stable with 2018 and was much less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Hypolimnetic (lower water layer), Inlet, and Outlet conductivity levels were within a low range and were less than the state median. Epilimnetic chloride levels were very low and less than the state median. Historical trend analysis indicates stable epilimnetic conductivity levels since monitoring began.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the lake water was lightly tea colored in June and then improved to within a clear range in July and August.
- ◆ **E. COLI:** Site 3, 6, 6C, 6F, and 6J E. coli levels were very low and much less than the state standards for public beaches and surface waters.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic and Hypolimnetic phosphorus levels fluctuated within a low range from June to August. Average epilimnetic phosphorus level increased slightly from 2018 but remained much less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus levels since monitoring began. Inlet and Outlet phosphorus levels were also within a low range.
- ◆ **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was below average (worse) in June, increased (improved) to a good range in July, and then decreased in August. Average NVS transparency increased slightly from 2018 and was higher (better) than the state median, however historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began. Viewscope transparency (VS) was much higher (better) than NVS transparency and likely a better measure of actual conditions.
- ◆ **TURBIDITY:** Epilimnetic turbidity levels were slightly elevated in June when water levels were high, then decreased to a low level and remained stable through August. Hypolimnetic, Inlet and Outlet turbidity levels fluctuated within a low range.
- ◆ **pH:** Epilimnetic and Outlet pH levels were within the desirable range 6.5-8.0 units, however epilimnetic pH levels have historically fluctuated below the desirable range. Historical trend analysis indicates relatively stable epilimnetic pH levels since monitoring began. Hypolimnetic and Inlet pH levels were slightly less than desirable.



Station Name	Table 1. 2019 Average Water Quality Data for ARMINGTON LAKE - PIERMONT										
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color pcu	Cond. us/cm	E. coli mpn/100ml	Total P mg/l	Trans. m		Turb. ntu	pH
Epilimnion	4.0	1.51	3	20	25.5		4	NVS: 5.01	VS: 6.08	0.56	6.68
Hypolimnion					23.9		8			0.65	6.32
Site 3						2					
Site 6						1					
Inlet					21.6	5	6			0.45	6.46
Outlet					40.0		7			0.50	6.57
Site 6C						30					
Site 6F						1					
Site 6J						1					

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

- Chloride:** > 230 mg/L (chronic)
- E. coli:** > 88 cts/100 mL – public beach
- E. coli:** > 406 cts/100 mL – surface waters
- Turbidity:** > 10 NTU above natural level
- pH:** between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

- Alkalinity:** 4.5 mg/L
- Chlorophyll-a:** 4.39 ug/L
- Conductivity:** 42.3 uS/cm
- Chloride:** 5 mg/L
- Total Phosphorus:** 11 ug/L
- Transparency:** 3.3 m
- pH:** 6.6

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Improving	Data significantly decreasing.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Worsening	Data significantly decreasing.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.

